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Atraumatic splenic rupture in a patient after apixaban use and radiologically inserted gastrostomy – a case report

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Abstract:

Introduction. Atraumatic splenic rupture (ASR), also known as spontaneous splenic rupture, is a rare, potentially life-threatening condition that can be a result of infection, malignancy, inflammation, and a complication of various surgical procedures. There are not enough studies about patient characteristics, incidence rates, aetiology, and guidelines for management associated with ASR.

Clinical case. A 53-year-old gentleman had a transoral robotic resection of the left tongue base/aryepiglottic fold carcinoma and level 2-4 neck dissection. Subsequently, he had a radiologically inserted gastrostomy (RIG) for his dysphagia and airway protection. Two days after RIG was inserted, the patient collapsed in the ward. Blood tests were done and showed a severe haemoglobin level drop from 123 g/L to 73 g/L. Computer Tomography (CT) of the abdomen showed splenic bleeding. He had emergency laparotomy with splenectomy which showed no signs of traumatic spleen rupture secondary to RIG insertion. A histopathology sample taken in theatre showed no pathological changes in the spleen. There were no other causes apart from apixaban which was stopped before the procedure and resumed 24 hours after RIG insertion.

Conclusion. ASR is a rare event in healthcare and the symptoms are not specific. Abdominal pain on the left side that can spread to the shoulder, a decrease in haemoglobin level, and signs of haemorrhagic shock are all possible signs of bleeding in the spleen. Anticoagulant therapies such as apixaban, rivaroxaban, direct-acting oral anticoagulants (DOAC), and dabigatran are linked to instances of ASR.

Keywords. Atraumatic splenic rupture, splenectomy, radiologically inserted gastrostomy, apixaban.

Introduction

Splenic rupture is typically caused by trauma. In some rare cases, it can be atraumatic. ASR, also known as spontaneous splenic rupture, is a rare, potentially life-threatening condition that can be a result of infection, malignancy, inflammation, and a complication of various surgical procedures (1,2). It is also reportedly associated with apixaban use in some published clinical cases (3,4,5,6).

There are not enough studies about patient characteristics, incidence rates, aetiology, and guidelines for management associated with ASR (1,2,7).

ASR is confirmed by CT scan or laparotomy if the patient is haemodynamically unstable. There are several grading systems established for splenic rupture based on CT scan and/or ultrasound findings which helps with management and decision making (8).

Case presentation

A 53-year-old gentleman was admitted under Ear, Nose & Throat (ENT) for transoral robotic resection of the left tongue base/aryepiglottic fold carcinoma and level 2-4 neck dissection. He has a past medical history of squamous cell carcinoma of the epiglottis and previous pulmonary embolism for which he is taking apixaban.

Following the procedure, the patient was seen by ENT and Speech and Language Therapists. Both teams did a videofluoroscopy and fiberoptic endoscopic evaluation of swallowing tests which showed moderate to severe pharyngeal dysphagia secondary to the procedure he had. His dysphagia was characterized by reduced airway protection (due to lack of epiglottis and vallecular space) resulting in persistent airway penetration and consistent post-swallow pooling of residue. Reversibility was unclear, therefore both teams agreed that the patient requires radiologically inserted gastrostomy (RIG) until his swallowing

function improves. Subsequently, he had a nasogastric tube inserted.

Two weeks later, the interventional radiology (IR) team inserted RIG. There were no complications after the procedure apart from mild pain in his abdomen which is expected after the procedure. The following day his haemoglobin (Hb) levels were stable (123 g/L). The pain in the abdomen was still mild and persistent.

Two days after RIG was inserted, the patient collapsed in the ward. Nurses immediately called Critical Care Outreach and ENT teams who examined the patient. He was stable but looked very pale. After examination, both teams assumed he had a vasovagal episode; however, blood tests were done and showed a severe Hb drop from 123 g/L to 73 g/L which indicated that the patient is having active bleeding. In light of the mild abdominal pain/distention and recent surgery, the ENT team requested CT of the abdomen scan on the same night which showed a large intra-abdominal haematoma with active bleeding and a large volume haemoperitoneum (Fig. 1, Fig. 2). The splenic rupture was likely a cause as the radiologist was not able to identify and separate the haematoma. IR team also reviewed images. They had an impression that the patient has venous bleeding which is unlikely related to the RIG procedure.

A general surgeon reviewed the patient and decided to take him to the theatre. Whilst he was waiting for his surgery, he received 4 units of red blood cells, 2 units of fresh frozen plasma, 1g of tranexamic acid and 3000 units of octaplex which stabilized his Hb levels to 88. He had emergency laparotomy with splenectomy which showed no signs or indications of traumatic spleen rupture secondary to RIG insertion. It was suspected that the patient had spontaneous spleen rupture which is not associated with RIG and likely was caused by apixaban use. The patient felt much better after the surgery with no metabolic disturbance or requirement for advanced organ support. He received pneumococcal, meningococcal, and haemophilus

vaccinations and was discharged from the hospital with life-long penicillin prophylaxis seven days later.

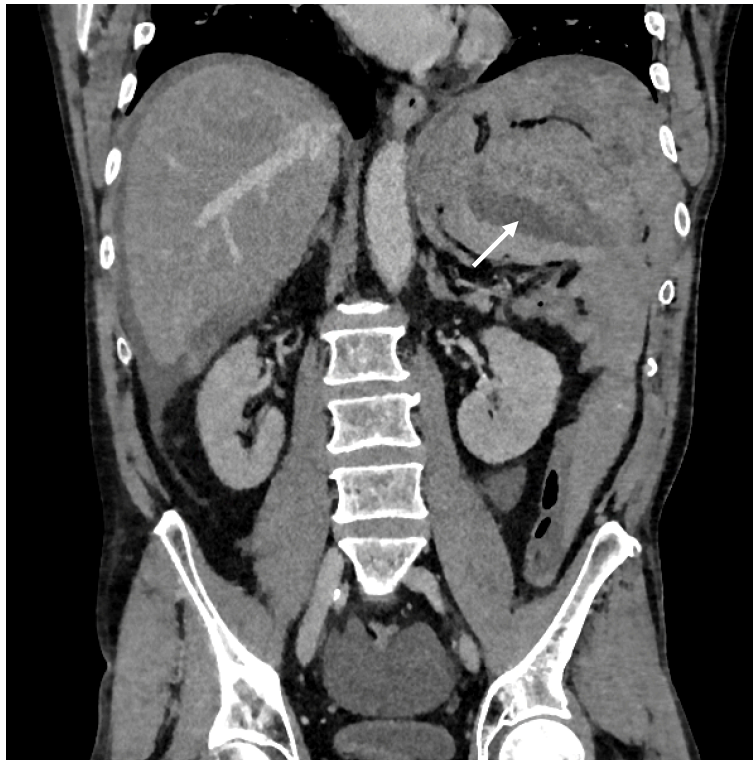


Figure 1. Coronal view of splenic rupture. A hypodense area marked with an arrow shows fluid between ruptured spleen. There is also visible fluid in peritoneum.

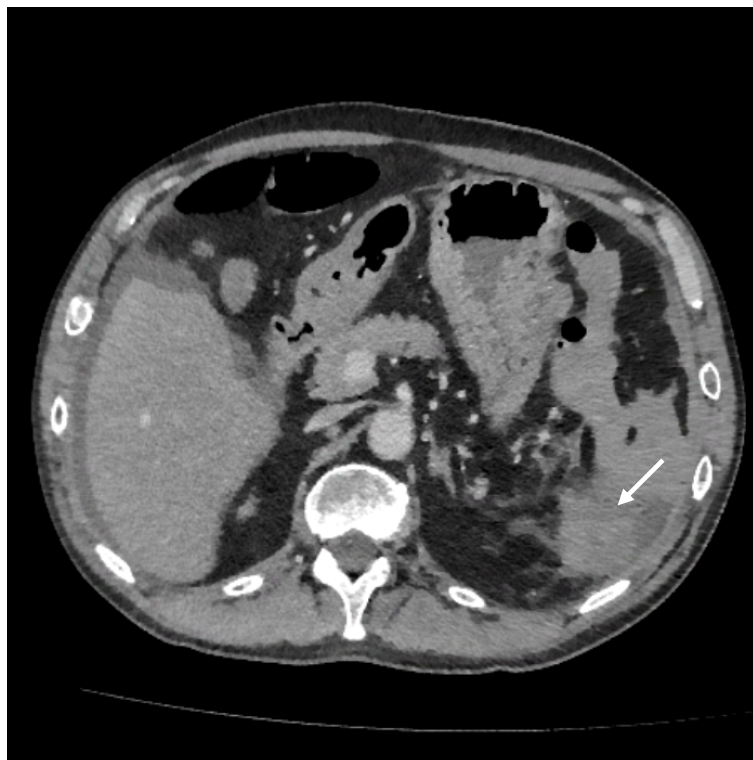


Figure 2. Axial view of splenic rupture. Spleen cannot be verified and separated from haematoma. A hypodense area marked with an arrow shows fluid between ruptured spleen.

Discussion

ASR is a rare event in healthcare. Medical procedures such as colonoscopy, hysterectomy, endoscopic retrograde, and cholangiopancreatography are reported to be a frequent cause of splenic injury (9). There have been no reports in the literature of actual spleen injury when a RIG tube was inserted (10). After discussion with the general surgeon who did laparotomy, we found out that there was no obvious connection between the RIG tube and spleen. Although the patient had a fall which can also contribute to splenic rupture, he was already feeling unwell before it. Thus, a fall was likely related to orthostatic syncope secondary to low intravascular volume from preceding splenic haemorrhage. A histopathology sample from spleen showed retained architecture and no overt pathological changes except for evidence of rupture. There were no other causes apart from apixaban which was stopped before the procedure and resumed 24 hours after RIG insertion.

As mentioned before, anticoagulant therapies such as apixaban, rivaroxaban, DOAC, and dabigatran are linked to instances of ASR (3). Anti-fibrinolytic therapy along with tissue plasminogen activator and streptokinase has also been associated with ASR (11). The symptoms of ASR are not specific. Abdominal pain on the left side that can spread to the shoulder, a decrease in haemoglobin level, signs of haemorrhagic

shock are all possible signs of bleeding in the spleen (12). Due to the non-specific clinical picture, it can be easily confused with peptic ulcer or heart disease in the absence of trauma. Our patient only had mild abdominal pain after the procedure which didn't indicate any obvious signs of intraabdominal bleeding until he collapsed on the floor. After further investigations, we found out he had low haemoglobin levels and signs of haemorrhagic shock.

Over the years, the management of splenic injuries has changed from surgical to non-surgical (13). Improved diagnostic and monitoring tools and advances in interventional radiology have contributed to this management (14). Splenic angioembolization should be considered in haemodynamically stable patients. Our patient was haemodynamically unstable; therefore, he had laparotomy and splenectomy.

References

1. Renzulli, P., Hostettler, A., Schoepfer, A. M., Gloor, B., & Candinas, D. (2009). Systematic review of atraumatic splenic rupture. *The British journal of surgery*, 96(10), 1114–1121. <https://doi.org/10.1002/bjs.6737>
2. Liu, J., Feng, Y., Li, A., Liu, C., & Li, F. (2019). Diagnosis and Treatment of Atraumatic Splenic Rupture: Experience of 8 Cases. *Gastroenterology research and practice*, 2019, 5827694. <https://doi.org/10.1155/2019/5827694>
3. Basnet, S., Mohanty, E., Mir, I., Dhital, R., Koirala, A., & Tachamo, N. (2019). Atraumatic splenic rupture associated with apixaban. *SAGE open medical case reports*, 7, 2050313X19832490. <https://doi.org/10.1177/2050313X19832490>
4. Yau, H. V., Pradhan, S., & Mou, L. (2020). Atraumatic splenic rupture in a patient treated with apixaban: A case report. *International journal of*

- surgery case reports*, 71, 270–273. <https://doi.org/10.1016/j.ijscr.2020.04.050>
5. Basnet, S., Mohanty, E., Mir, I., Dhital, R., Koirala, A., & Tachamo, N. (2019). Atraumatic splenic rupture associated with apixaban. *SAGE open medical case reports*, 7, 2050313X19832490. <https://doi.org/10.1177/2050313X19832490>
 6. Abdelhady, A., Ahmed, A., Mohamed, Y., & Binchy, J. (2018). Apixaban-Associated Spontaneous Splenic Rupture-A Case Report. *Irish medical journal*, 111(7), 792.
 7. Lieberman, M. E., & Levitt, M. A. (1989). Spontaneous rupture of the spleen: a case report and literature review. *The American journal of emergency medicine*, 7(1), 28–31. [https://doi.org/10.1016/0735-6757\(89\)90079-x](https://doi.org/10.1016/0735-6757(89)90079-x)
 8. Weaver, H., Kumar, V., Spencer, K., Maatouk, M., & Malik, S. (2013). Spontaneous splenic rupture: A rare life-threatening condition; Diagnosed early and managed successfully. *The American journal of case reports*, 14, 13–15. <https://doi.org/10.12659/AJCR.883739>
 9. Aubrey-Bassler, F. K., & Sowers, N. (2012). 613 cases of splenic rupture without risk factors or previously diagnosed disease: a systematic review. *BMC emergency medicine*, 12, 11. <https://doi.org/10.1186/1471-227X-12-11>
 10. Schrag, S. P., Sharma, R., Jaik, N. P., Seamon, M. J., Lukaszczyk, J. J., Martin, N. D., Hoey, B. A., & Stawicki, S. P. (2007). Complications related to percutaneous endoscopic gastrostomy (PEG) tubes. A comprehensive clinical review. *Journal of gastrointestinal and liver diseases : JGLD*, 16(4), 407–418.
 11. Cheung, P. K., Arnold, J. M., & McLarty, T. D. (1990). Splenic hemorrhage: a complication of tissue plasminogen activator treatment. *The Canadian journal of cardiology*, 6(5), 183–185.
 12. Carey, R., & Nelatur, V. (2018). Spontaneous splenic rupture secondary to dabigatran: the last in a series of unfortunate events. *Clinical medicine (London, England)*, 18(5), 406–408. <https://doi.org/10.7861/clinmedicine.18-5-406>
 13. Liu, P. P., Liu, H. T., Hsieh, T. M., Huang, C. Y., & Ko, S. F. (2012). Nonsurgical management of delayed splenic rupture after blunt trauma. *The journal of trauma and acute care surgery*, 72(4), 1019–1023. <https://doi.org/10.1097/TA.0b013e3182464c9e>
 14. Hildebrand, D. R., Ben-Sassi, A., Ross, N. P., Macvicar, R., Frizelle, F. A., & Watson, A. J. (2014). Modern management of splenic trauma. *BMJ (Clinical research ed.)*, 348, g1864. <https://doi.org/10.1136/bmj.g1864>